REMARKS

Information Disclosure Statement

An Information Disclosure Statement (IDS) was filed on October 28, 2002. The Examiner states that the IDS fails to comply with 37 C.F.R. § 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent and publication. Applicants enclose herewith a copy of the Postcard Receipt for the IDS, which indicates that copies of all references included on the PTO-1449 forms were enclosed with the IDS and were received by the U.S.P.T.O. Applicants are also enclosing herewith copies of the non-U.S. patent references (References AL-AW, AM2-AQ2 and AL3-AO3), as requested by the Examiner. Because these references were previously received by the U.S.P.T.O., it is assumed that no fee is required in order to permit entry and consideration of the non-U.S. patent references.

Election

Applicants wish to further clarify the statements made by the Examiner in the present Office Action. The Examiner previously required that Applicants elect a polymer species and a type of mucositis for searching purposes. Applicants elected the polymer of Claim 24 as the polymer species. Claims readable on this species are Claims 1-10 and 20-24. Applicants elected oral mucositis that is a side effect of radiation therapy as the type of mucositis. Claims readable on this species are Claims 1-8 and 10-32. Claims that read on both of the elected species are Claims 1-8, 10 and 20-24, as correctly stated by the Examiner.

Applicants assume that all claimed subject matter will be examined upon the allowance of Claim 1.

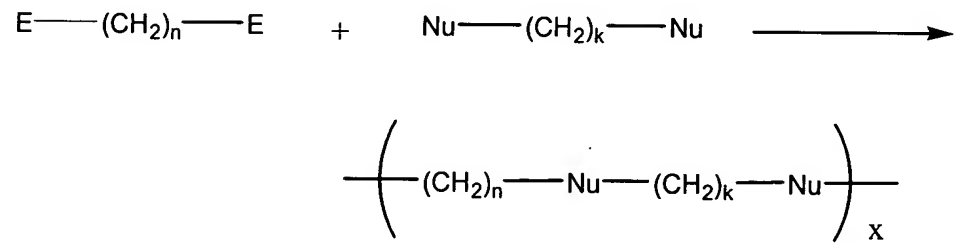
Rejection of Claim 4 Under 35 U.S.C. § 112, First Paragraph

Claim 4 is rejected under 35 U.S.C. § 112, first paragraph, for lack of enablement. The Examiner states that while the specification is enabling for the inhibition of mucositis and the reduction in severity and size of mucositis, it does not reasonably provide enablement for the prophylaxis and/or prevention of mucositis. Specifically, the Examiner states that there is no established exemplification on how mucositis is prevented.

Applicants respectfully disagree that the prophylaxis and/or prevention of mucositis is not enabled by the specification. It is reasonable to expect that a therapy that successfully treats an

active disease state would also be effective in preventing the disease state from developing and/or from becoming established. Moreover, one skilled in the art would be able to identify risk factors (e.g., receiving cancer therapy) and begin treatment before symptoms appeared. As a result, it is reasonable to expect that mucositis can be prevented by the claimed method. In contrast, the Examiner has presented no reasoning or evidence to suggest why a skilled artisan would require undue experimentation to determine how to use a polymer of the invention to prevent mucositis. The Examiner has provided only conclusory statements regarding the enablement of Claim 4. As such, the Examiner has not met the burden for alleging that Claim 4 lacks enablement. Reconsideration and withdrawal of the rejection are respectfully requested.

At the bottom of page 4 of the Office Action, the Examiner has stated that a skilled artisan would have a numerous amount of modifications to perform in order to obtain compounds of Formula (II). Applicants respectfully disagree. A general method for preparing polymers used in the invention can be found at page 19, line 22 through page 20, line 19. One reaction falling within the general method is reproduced schematically below:



where E represents an electrophilic, Nu represents a nucleophilic group and k, n and x are positive integers. This reaction is a specific type of nucleophilic substitution reaction, a well known class of reactions. Applicants note that the molecules used in this scheme are being used to illustrate the concept disclosed in the specification and should not be regarded as representing the full extent of reactions enabled by and described in the specification. In particular, ionene polymers can have more substituent groups than shown above.

There are several examples in the application where polymers falling within Formula (II) have been successfully prepared. For example, polymers of Formula (II) were prepared in Examples 6 and 17. In addition, the specification discloses at page 19, lines 22-25 that N,N,N'N'-tetramethyl-1,3-propanediamine can be used in polyionene synthesis; this molecule would produce a polymer of Formula (II) when reacted with a divalent electrophile.

The Examiner has presented no reasoning or evidence as to why other divalent nucleophiles could not be reacted with other divalent electrophiles in a nucleophilic substitution reaction to produce a polyionene. As stated above, nucleophilic substitution reactions are well established reactions and are generally expected to be successful. Polymers of Formula (II) are produced by a type of nucleophilic substitution reaction. Thus, the specification provides a skilled artisan with sufficient guidance to prepare polymers of Formula (II).

Provisional Rejection of Claims 1, 2, 10 and 20-24 Under Obviousness-Type Double Patenting

Claims 1, 2, 10 and 20-24 are provisionally rejected under obviousness-type double patenting over Claims 36-38, 42-44 and 48-50 of co-pending Application No. 10/051,765 (hereinafter referred to as "the '765 Application"). The Examiner states that based on the disclosure of the antimicrobial activity of polyionenes, it would have been obvious to administer a polyionene copolymer to a subject to treat mucositis.

Applicants respectfully traverse this rejection. Claims 36-38 of the '765 Application are directed to an ionene polymer or copolymer. Claims 36-38 do not involve a method of treatment. The instant method of treatment claims cannot be obvious in view of the composition claims in the '765 Application. Moreover, a product and process of using the product are properly considered to be patentably distinct inventions. MPEP § 806.05(h) states:

> A product and a process of using the product can be shown to be distinct inventions if either or both of the following can be shown: (A) the process of using as claimed can be practiced with another materially different product; or (B) the product as claimed can be used in a materially different process.

In the present case, the instant application discloses at page 2, lines 28-29 that chlorhexidine mouthwash is used extensively in the treatment and prevention of oral mucositis. Thus, the process of using can be practiced with another materially different product than ionene polymers, namely chlorhexidine mouthwash. Chlorhexidine is a small molecule and is clearly different from an ionene polymer. Thus, instant Claims 1, 2, 10 and 20-24 and the cited claims of the '765 Application are properly considered to be patentably distinct. Accordingly, the instantly claimed subject matter is not obvious in view of Claims 36-38 of the '765 Application.

Claims 42-44 are directed to a method of treating a microbial infection in a mammal by administering a polymer or copolymer of Claims 36-38. It is not obvious that mucositis can be treated by this method. The properties of the mucosa, particularly the fluid flow over many mucosal surfaces (e.g., the mouth), tends to wash substances away. A substance needs to contact the mucosa for a sufficient time to have its therapeutic effect. One skilled in the art would not have expected that polyionenes of the invention would contact the mucosa for a sufficient amount of time to have a therapeutic benefit. Moreover, although mucositis can be caused by a microbial infection, it has not been established by all occurrences of mucositis are associated with a microbial infection. Instead, mucositis is a complex biological process that represents the sequential interaction of mucosal cells and tissues (see page 2, lines 17-25 of the specification). It is unexpected that mucositis resulting from various causes can be treated with polyionenes.

Claims 48-50 are directed to a method of inhibiting the growth of a microorganism on a surface by administering a polymer or copolymer of Claims 36-38. It is not obvious that mucositis can be treated by this method. For reasons provided above, treatment of the mucosa is particularly difficult. Moreover, an anti-microbial method for disinfecting a surface, as recited in Claims 48-50, does not render obvious a therapeutic method, such as the therapeutic method recited in the instant claims.

Applicants have now demonstrated that the mucosa are a challenging environment for treating an infection, due to the difficulty of maintaining a therapeutic amount of an active agent on the mucosa. Applicants have also demonstrated that it is unexpected that mucositis resulting from multiple causative factors can be treated with ionenes. Thus, Claims 1, 2, 10 and 20-24 are not obvious in view of Claims 36-38, 42-44 and 48-50 of the '765 Application. Reconsideration and withdrawal of the rejection are respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If

the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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